

WHAT IS CLAIMED IS

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1. A semiconductor device, comprising:
a compound semiconductor substrate having a
resistivity less than 1.0×10^8 Ohm-cm at least at
surface thereof;

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a buffer layer formed on the compound
semiconductor substrate and having a super lattice
structure; and

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an active layer formed on the buffer layer
and having an active element formed therein.

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2. A semiconductor device as claimed in
claim 1, wherein the compound semiconductor substrate
has a resistivity less than 0.6×10^8 Ohm-cm.

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3. A semiconductor device as claimed in
claim 1, wherein the active layer is formed at a
position within $5.0 \mu\text{m}$ from the surface of the
compound semiconductor substrate.

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4. A semiconductor device as claimed in
claim 1, further comprising an electrode layer formed
on another surface of the compound semiconductor
substrate.

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5. A semiconductor device as claimed in claim 4, wherein the electrode layer is not electrically connected to the semiconductor device.

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6. A semiconductor device as claimed in claim 4, wherein the electrode layer is connected to one power supply potential of the semiconductor device.

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7. A semiconductor device as claimed in claim 1, further comprising:

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a source electrode and a drain electrode formed on the active layer, separated from each other so as to establish a channel region, and

a gate electrode formed above the channel region.

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8. A semiconductor device as claimed in claim 7, wherein the active layer has 2-Dimensional Electron Gasses.

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9. A semiconductor device as claimed in claim 1, wherein the active layer comprises:

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a collector layer of a first conducting type;

a base layer of a second conducting type formed on the collector layer;

5 an emitter layer of the first conducting type formed on the base layer.

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10. A semiconductor device as claimed in claim 1, wherein the compound semiconductor substrate has a resistivity more than 1.0×10^8 Ohm-cm in total.

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11. A semiconductor device as claimed in claim 1, wherein the compound semiconductor substrate comprising a compound semiconductor support substrate having a resistivity more than 1.0×10^8 Ohm-cm and a compound semiconductor having a resistivity less than 1.0×10^8 Ohm-cm.

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